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POSSIBILITIES IN MUSIC STUDY.

IN the great impulse toward the realization of a more artistic ideal in school music which swept over the country some years ago, various important truths were demonstrated: first, that children's voices, both in the mass and as individuals, are capable of a perfectly legitimate development, and that every normal voice can, if properly taught, become agreeable and expressive; second, that children like good music as well as bad, if they are given the opportunity of hearing and performing it; third, that singing in schools may become a thoroughly artistic product; further, that it may serve as the basis for a complete musical education. As a result of these new conceptions, improvement in music and music-teaching was to be seen in many localities. The abomination known as the "school tone" gradually disappeared. Teachers with some pretension to vocal gift and training took the place of the leathern pedagogues of the singing-school type, and school-rooms began to echo with real music — even classic music. If the interpretation of these excellent works frequently left much to be desired, one had at any rate the satisfaction of knowing that the nobility of the compositions could not fail to leave a permanent impression upon the taste of the young singer. At the same time, the open-minded teacher could but be thankful for suggestions which helped preserve the sweetness and lightness of the voices in his charge.

This movement in behalf of better music and better singing marked a distinct epoch in the history of music-teaching in

America. Previous to this time the vocal ideal of the average pedagogue was to "raise the roof"—an ideal not difficult of realization. That such singing was fraught with demoralization to generations of voices was inevitable. The shrill, harsh voice of childhood developed into the throaty, nasal tone of maturity, and the new school undertook an arduous task in trying to reform both.

Perhaps it was too much to expect that this movement, while repudiating the errors of the system it had replaced, should retain their good features. At any rate, the new methods, while their artistic results were astonishing, swung so far away from the old that even the good inherent in the old was ignored. The fascination of singing a beautiful song without the drudgery of reading notes proved too great to be resisted by either pupil or teacher. Children, instead of hating the music lesson, began to love it best of all. But the rote-song reigned supreme, and any real effort at acquiring the technique of reading notes was abandoned.

The one strength of the old school was that it taught note-reading. Its methods were hard, crude, and unphilosophical; its material, uninteresting and inartistic. But it accomplished what it set out to do—namely, to give the power to decipher the symbols of written music. It did not appeal to the emotions or the expressive instinct of the singer; neither did it give any hint as to the correct use of his voice. It concentrated upon a purely intellectual aspect of the subject, and it would have been strange indeed, when the efforts of instructor and instructed were bent upon the mastery of one problem, if the children had not learned something tangible about music notation. This the more, as the unmusical children were counted out of the game, and by being "excused" from music relieved the teacher of his most difficult task.

To teach children of normal musical ear merely to read music, ignoring the vocal and interpretive aspects of the art, and stripping this to the bare bones of its theoretic skeleton, is an easy undertaking compared to the task the modern music teacher has set for himself.

The two schools which thus confronted each other might be symbolized, the one by an old, gnarled, ill-nourished tree, sending out here and there a few starved leaves; the other by a beautiful armful of blossoms from a flourishing, healthy growth, but without root or vitality of its own. The former showed some appearance of vigor, but was without power to produce either blossom or fruit. The latter offered perfume, beauty, and delight, but parted from its parent tree could equally not hope for fruition.

Latterly, however, the two schools have approached each other, and each has borrowed from the other. The disciples of the new movement were made aware that to sing, even to sing charmingly, is not enough, if the singer derives his songs by imitation from others; that the child barred out from the great field of music by his own inability to think and read is helpless indeed. For the systems which proclaim the vanity of technical training have either been found unable to give their disciples power to perform, or they have substituted a new, and often a more complicated, system of technical training for that which they condemn.

On the other hand, the old school has ceased to make certain demands which were formerly absolute. One seldom hears nowadays that "a child must not be allowed to sing what he has not read." The rote-song has been admitted, though perhaps grudgingly admitted, as legitimate material for study, and there has been some recognition of the fact that it is unjust and unwise to condemn the most musical children to an inevitable and unchanging alto in part-songs.

On all sides there seems to be a strong reaction against partial education in music. That school music may be beautiful music is now universally conceded; only there is, of course, great difference of opinion as to what beautiful music is. It is also considered, not only possible, but necessary, that children in schools should sing with sweet and unstrained voices.

But this is not enough, says intelligent public opinion. The musical sense must be trained. The power to think independently, to sing independently, to write music as well as read it, to understand good music and to love it, and even to make music of one's

own, are some of the things which, we are told, may be expected today of music education in schools.

The ideal of the intelligent teacher of music is one difficult of realization. To keep the fine balance between technique and feeling, between emotional enjoyment and intellectual effort; never to forget the ultimate object of music in the midst of technical drill; to know one's music absolutely — its melody, harmony, and rhythm, the laws governing its structure and interpretation; to be master of the purely vocal side of the art; all this and much more belongs to the equipment of the thorough and artistic teacher of today.

There are, to be sure, strongholds of conservatism all through the country where the methods of fifty years ago still prevail. There are more progressive communities where we find reversions to the dry and hard intellectualism of the past. In the course of study prescribed by one eastern metropolis the study of singing will be seen to have withered and desiccated into the mastery of a set of mathematical problems. These are neatly numbered and systematized, and quite logically arranged: Problems 1-15 for the second grade; Problems 115-156 for the seventh grade. In another large city the supervisor of music insists upon a regular course of training in note-reading in the kindergarten — a barbarous proceeding, indeed, when we remember how much more complicated are the symbols of written music than those of a written language. The reactionary music master in a western city forbids everything which smacks of the "fad," within the limits of his supervision. Accordingly, because the modern teacher has made much use of music appropriate to the season, as well as songs fitting in more important respects, our supervisor prescribes for a Thanksgiving exercise a sentimental love-song beginning:

> Last night the nightingale woke me,
> Last night when all was still.

To the musician occupied alone with his art it might seem a far cry from a discussion of music in schools to a consideration of that much-talked-of and greatly desired good — real American music. But to the thoughtful these two subjects seem most inti-

mately connected; for music worthy the name has sprung only from a people the mass of which has been leavened through and through by the gracious influence of song. The artistic impulse expressed itself only through an accustomed medium, and he who originates melody must have a thousand melodies in his mind. Music must be the air he breathes. The composer works out his elaborate forms from the simple songs of the people, but the songs of the people are the expression of the national artistic life, and will grow only in soil fertile with popular interest and appreciation of the art. It is, therefore, primarily the people who make the music of a country — not its musicians. These are a later outgrowth of the popular artistic life. Nor does the apparent appreciation of a large number of people of a well-advertised virtuoso argue any interest in music. The crowds that stream to the concerts of Patti and Paderewski are seeking not so much music as opportunity to see and hear a much-talked-about individual. One really simple, beautiful melody which permeates the mass of the people — which is *im Volksmunde,* which touches the heart and abides in the memory — does more than many artists for the musical growth of a nation. The artist ministers to an aristocracy, to the small company of the really cultured in the world. But in a country like America only those influences which touch the mass can hope to civilize it. The power of a music center is great to affect those within reach of its radiations. The orchestra, the occasional opera season, even the church in great cities, exert a beneficent artistic influence. But this is for the well-to-do, or for those exceptional persons who are willing to make sacrifices for the sake of a beloved art. The poor, the dwellers in city slums or on outlying farms, are all dependent upon larger and more democratic influences — the music of church and school, of the street and cheap entertainment.

Of all these forces, school music is perhaps the most potent, because the most constant, and because it is brought to bear upon the impressionable mind and unformed taste of children. Much that is simple, good, and appropriate is being taught to school children throughout this country. Folk-songs of different nations, part-songs from many artistic sources, even music of the very

best description finds its way into the schoolroom. Much of this music is carried home; the children sing their songs together, and parents and friends enjoy the singing. In this way an interest in music is propagated. The school furnishes better music than church or entertainment, and through its teaching of note-reading gives access to new songs.

Whether this power is expended for good is largely a matter of the teacher — his training and his standards. Has the teacher skill and talent, taste and conscience, his influence upon his pupils, and through them upon the community, will be incalculable. But he must be left untrammeled by politics and the dictates of his superiors, who often exert an absolute power in deciding upon musical subjects of which they know nothing. If the teacher has neither skill nor taste, his influence will be to the perpetuation of trashy music and mechanical singing. If he has no conscience, he will select for his school-work music which, instead of appealing to the best in his pupils, will satisfy his own personal taste, or help him to the quickest and most easy popularity. This teacher will give a cheap and catchy song to his pupils because of these qualities, irrespective of whether its effect is moral or immoral, its content appropriate or inappropriate, or its music and poetry good or bad. He will give love-songs to children, "train down" or "train up" voices for special occasions, and sacrifice the future of beautiful voices for the sake of singing ambitious music.

The really faithful and conscientious teacher must have courage and patience, must be content to surrender immediate popularity, and must regard the well-being of his pupils more than his reputation for securing glittering results. He will live up to the best he knows, though not by adherence to a set of rigid standards. He will remember that it is possible to interest children in good music as readily as in bad, and that much of the best music has in it the power to attract the untrained mind. He will not try to compete with the vaudeville and minstrel show, though he knows that the forms of music spread about by these entertainments is the most popular of all. The really valuable teacher will seek to know what is possible, not only of school music, but of all music. He must have had the vocal experience which he deems advisable

and practical for his pupils. His ability to play instruments — especially the piano — will be the greatest resource in his work, though he must not confuse the less with the greater, and must not overestimate the importance of the piano in the study of singing. Some knowledge of languages, too, opens the way to much beautiful song material, which, without a knowledge of strange tongues, would be unattainable.

Perhaps the greatest fault of the special teacher in the past has been his failure to recognize the relation between his work and the general work of the school. He has too often considered the teaching of his art a thing apart, without common ground with other subjects of the curriculum. Not only this, but the music master of the past knows little of the theory of education, and less of the progress of modern thought in this direction. Many schoolbooks in constant use in America are witnesses to the truth of this statement; for these disclosé methods of teaching obsolete twenty years ago in other provinces.

It has been said, indeed, of the special teacher of music that he is either a musician who knows no pedagogy or a pedagogue who knows no music. This will doubtless be true in some degree until the public realizes that more training is demanded of the special teacher than the three-week course in summer schools throughout the country. So long as the scrappy and superficial instruction given at such schools is regarded seriously by teachers and pupils, there is little prospect of improvement. In the meantime, the courses for the training of specialists offered by leading universities and teachers' colleges give evidence that there has been an awakening, in more than one educational center, to the necessity for such training.

In the larger future awaiting music education in schools, its province will be enlarged, its mission will be regarded more seriously, and greater demands will be made upon the skill and knowledge of those who teach the art. To this development will contribute only those whose outlook upon the subject is large and complete.

The school of teaching which recognizes technical training in the purely intellectual phases of the art as the one thing needful,

as well as the school which finds emotional joy in singing the one essential, must realize that each conception is partial, and that only through co-operation and mutual appreciation can the true and universal way be gained.

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PRESERVATION OF THE VOICE.

Voice is the principal means of communicating our thoughts, impressions, and emotions. It is produced by vibration of the true vocal cords. The vocal cords vibrate from a current of air passing between them. While thus vibrating they are approximated, and held in a state of tension, by muscular action. The mere vibration of the vocal cords produces only a feeble sound. The intensity of the voice sound depends on the amount of the inspiratory blast, and a reinforcement of the vibrations by the resonating cavities that are above and below the vocal cords. To understand the action of the larynx in voice production, we should make an anatomical study of this organ. When removed from its muscular connections and viewed as a vertical transverse section, the larynx is shaped somewhat like an hour-glass. The true vocal cords form a line of constriction about midway between the top of the epiglottis and the lower border of what is known as the cricoid cartilage.

The true cords arise from the angle formed by the sides of the thyroid cartilage where they meet in front, a little below its middle point, and, passing backward, are inserted into the vocal processes of the arytenoid cartilages. The aperture between the vocal cords, and between the vocal processes of the arytenoids, is known as the glottis or rima glottidis. Since the vocal cords may be brought together while the vocal processes of the arytenoids are widely separated at their bases, the spaces between the cords themselves is called the rima vocalis, and that between the vocal processes the rima respiratoria.

In the adult male the vocal cords measure about fifteen millimeters in length, and the vocal processes measure eight millimeters in addition. In the female the cords are from ten to eleven millimeters in length. The free edges of the cord are thin and straight, and are directed upward. Their median surfaces are flattened. Each cord is composed of a tense bundle of fibers of

yellow, elastic tissue, which fibers, though having a general longitudinal course, are interwoven, and send off shoots laterally in the subjacent tissue. This compact ligament, known commonly as the "vocal cord," forms only the free edge of a reflection from the side wall of the larynx. This reflection is wedge-shaped in a vertical, transverse section, and contains much elastic tissue, and the internal and part of the external thyro-arytenoid muscle. This whole structure properly forms the vocal cord, and by contraction of its contained muscle its thickness and vibrating qualities may be greatly modified. We therefore conclude that (1) the cricoid cartilage is the most movable part of the laryngo-tracheal tract; (2) the thyro-cricoid muscle, according to its physiological action, should be described as arising from the thyroid cartilage, and inserted into giving motion to the cricoid; (3) the air blast, by virtue of the mechanism herein set forth, is a direct and important longitudinal tensor of the vocal bands.

Having thus considered a few of the principal anatomical points of interest in voice production, we see that the vocal machinery consists of (1) the motive power of breath; (2) the larynx, which forms the tone; (3) the chest, the pharynx, the mouth, and the nose, each coloring the tone; and (4) the organs of articulation.

The production of voice is undoubtedly accomplished by the vibration of the vocal cords, which have previously been approximated in the middle line and made tense through action of the nerve-muscular apparatus already described. A blast of air from below, pressing against the cords so adjusted, causes them to separate and fall into vibration.

We have to distinguish in voice the three features of loudness, pitch, and quality.

The loudness of the tone depends upon two factors: (1) the strength of the tone-producing blast, as determining not only the amplitude of vibration of the vocal cords, but also the energy with which the air is expelled; (2) the resonance of the two chambers between which the vocal cords are suspended, the chest below and the cavities of the head above, whose walls and con-

tained air, by their sympathetic vibration, powerfully reinforce the oscillations imparted to them.

The pitch of the voice is determined by thickness, tension,[3] and length of the vocal cords — conditions which regulate the pitch of the note obtained from any vibrating string. The thickness and elastic quality of the cords are probably largely under the control of the thyro-arytenoid muscle. The principal tensor of the cords is the crico-thyroid muscle. Other muscles, as described above, may so fix the arytenoid cartilages that the vocal processes may be prevented from taking part in the vibration of the cords throughout the whole, and also possibly throughout part only, of their length. This dampening of the vocal processes of the arytenoids may be accomplished either by pressure applied to them throughout their whole length, in which case the posterior part of the glottis is closed, or by their being pressed together at the tips alone, leaving the respiratory glottis open as a triangular aperture.

In the human voice the current of air is furnished by the lungs, which have therefore a double duty to perform — supplying oxygen to the blood, and setting up vibration in the vocal cords for the voice. The chest is supplied with the most perfect mechanism for obtaining this current of air. The main support is furnished by the ribs, which give firmness to the chest. These are held together and supported by muscles of great strength, which raise the ribs in the act of inspiration. The lower part of the chest is inclosed by a broad, flat muscle, known as the diaphragm, which materially assists in giving its bellows-like faculty to the chest. In the act of inspiration the diaphragm is lowered and the ribs are raised, thus creating a space in the lungs which is filled by the air entering through the nose and throat. In expiration, however, this is reversed, the ribs being lowered and the diaphragm raised, the process being assisted by the natural elasticity of the lung tissues. The thorough understanding of this function of the lungs should impress us with the importance of not hampering their action by tight clothing or lacing, which necessarily interferes with their freedom of action, and by thus lowering the resistance of the body makes it more liable to the entrance of disease.

Improper methods of using the voice lead to certain affections of the throat, the chief one of which is popularly known as "clergyman's sore throat," though by no means confined to members of the clerical profession. It occurs in all classes of persons who strain the voice or misuse it. It consists in a congestion of the mucous membrane and muscles of the throat, with enlargement of many of the minute glands which secrete the lubricating fluids that keep the surfaces of the throat moist and pliable. These enlarged glands are visible in the form of prominent groups of projections varying from the size of a pinhead to that of a small bean, and are irregularly distributed upon the surface of the mucous membrane. The mouths by which these glands discharge their lubricating material become choked by swelling, and the material becomes pent up in them and is unable to escape, and so accumulates in the glands and distend them. The congestion alluded to, which is the first step in the entire process, is produced in this manner.

The muscles of the throat, which should be more or less at rest during the use of the voice, are absolutely put into continuous constrained action in the improper methods of speaking, as is evinced by noncomparable sensations during protracted impassioned speaking, or shortly after it. Just as physical consciousness of the possession of a stomach, or of a tooth, for example, is evidence that something is wrong, for the time, with the stomach or tooth, so physical consciousness of the possession of a throat during speaking, or shortly afterward, is evidence that something is wrong with the throat. The strain upon the throat muscles and the sense of uneasiness following, may both be avoided by proper use of the voice. In civilized communities, conventional or affected methods of doing things of various kinds are employed by many people instead of natural methods, for various reasons, such as the desire to impart to others a sense of individual importance or originality; and these methods are copied or imitated by others. Hence erroneous and affected methods of speaking become widespread. Especially pernicious is the common practice of indiscriminate and untrained use of the voice. Yelling out of doors, as at athletic contests, particularly football, often results in

serious, if not permanent, impairment of the vocal cords. Such noises might be denominated as "unorganized" vocal noise.

As to the causes which produce a complete or partial loss of the voice, they are very numerous and varied. A simple exposure or cold draft may cause an acute inflammation of the whole mucous membrane of the larynx, with a swelling of the vocal ligaments, which are thus unable to vibrate, and the result is that the patient cannot speak above a whisper. This state, as a general rule, disappears again in a day or two, even without any treatment, and the voice regains its natural tone and strength. In many instances, however, only the total loss of the voice, if such existed, is relieved, while a hoarseness or huskiness of the voice remains, in spite of all ordinary remedies, and even general medical treatment. If this is the case, the inflammation of the mucous membrane has become chronic, and the vocal cords indurated, or thickened, so that it requires an undue amount of breath to set them in vibration, and a sense of bodily fatigue is experienced after a continued use of the voice, as in reading aloud, or even in ordinary conversation. If this chronic inflammation is allowed to remain, small ulcers or sores will make their appearance in various parts of the larynx, and vocalization, and even swallowing, may become painful. If, however, popular speakers or singers are thus affected, the exposure to a draft is generally only the observed starting-point of the disease, while the true cause of the trouble must be looked for in a faulty use and overstrain of the voice in speaking, as well as in singing, which, by constantly irritating the delicate organs of the throat, predisposes them to be thus affected. It is usually asserted that the use of the voice, coming to us naturally and without any effort, just like breath, cannot be harmful. Yet we forget that we form bad habits of speaking, as well as of any other natural act, walking for instance; and that it is these bad habits that are harmful, and not the natural use of our organs. The drawing of the voice over a considerable part of the scale, while pronouncing one syllable, as we hear it almost universally in conversation and public speaking, is not only disagreeable to the ear, and impairs the effect of the expression, but is also harmful in obliging the

delicate muscles of the larynx to an undue amount of work. This is only one of the many instances of bad habits of speaking; to enumerate each would be to tax the patience of the reader too much.

Another, but by no means as common, a cause of loss of voice is a more or less sudden paralysis of the vocal cords. If their muscles remain relaxed, vocal bands are seen in the laryngoscopic mirror to be closely applied to the sides of the larynx, thus leaving a large triangular opening between them, through which the exhaled air passes without obstruction, and consequently without being set in vibration. This condition is designated as a complete paralysis of both vocal cords. In many cases, however, only one side is affected, and then we see in the mirror an attempted vocalization, and that the cord on the sound side moves toward the median line, while the one on the affected side remains quiescent. Under these circumstances a sound cannot be produced, owing to the still too wide opening between the two cords. If, on the other hand, one of the vocal ligaments is sound, and the other only partially paralyzed, so that it makes an attempt at meeting in the median line, a sound may be produced, but it will be hoarse on account of the irregularity with which the air is set in vibration. This irregularity is owing to the fact that the paralyzed cord is not as tightly stretched, and consequently does not vibrate with the same rapidity as the other one. The newsboy screaming out the titles and interesting items of his papers, overstrains his voice, and is suddenly attacked by a paralysis of his vocal cords, so that he can not utter another sound.

Still another, and by no means infrequent, cause of loss of voice is small tumors which grow either on the vocal cords themselves or on the mucous membrane in their immediate neighborhood. Such growths interfere mechanically with the free movements of the vocal cords, by projecting into the glottis, and thus preventing the necessary approach of the edges of the vocal cords. If they are comparatively large, they may, and frequently do, interfere with respiration to such an extent that it becomes necessary, if they cannot be removed early, to make an opening into the windpipe below the larynx in order to supply sufficient air to the lungs, for the aëration of the blood.

Inspiration should always be by the nostrils. The air inhaled by the mouth in quick breathing has not time to become warmed; while, by steadily breathing through the nostrils, air of a higher temperature is introduced into the trachea. But it is not for this reason only that the nose is the best respirator and protector of the lungs, but also because a considerable portion of the extraneous substances present in the air, such as dust, coal soot, etc., is intercepted by the little hairs which line the nostrils, and are thus retained and deposited on the mucous membrane of the inner walls of the nose. The importance of breathing through the nostrils has never been sufficiently recognized. Vocalists ought in the morning, immediately upon rising, to bestow particular attention to their noses.

The general rules for the preservation of the voice may be said to be substantially the same as those for the preservation of health; resting on the fundamental principle to be temperate in all things. There are, however, some particular points to be attended to, which the singer, to whom his voice is his fortune, must not neglect.

The apartments, especially the bedroom, should be dry, airy, and well ventilated. The upper stories are much preferable to the ground floor. The dress of the professional singer ought to be light, and but moderately warm. Those who accustom themselves to wearing very heavy clothing are very apt to catch colds. That neither the chest nor the neck should be cabined and confined is sufficiently obvious. The best prevention against catarrhal conditions are: daily ablutions with cold water, and hardening the body by exercise in the open air, regardless of the state of the weather. Those who are unaccustomed to the use of cold water should begin the practice in summer. Alcoholic liquors and smoking are universally injurious to the voice.

The preservation of the teeth is of considerable importance to the singer, as by their loss the resonance and the articulation suffer considerably.

Nostrums for the voice should be avoided, or at least discriminately used. They may at first appear to improve the voice, but they will ultimately and permanently injure it. Troches,

cough drops, and expectorants of all kinds should be very sparingly used, as by their too frequent use the tone of the mucous membrane becomes perverted, and serious results follow.

Keep the throat, especially the naso-pharyngeal cavity, as clear and as clean as possible. Its lining requires the same care in the matter of cleanliness as does that of any other organ.

LUNG GYMNASTICS.

Preservation of the voice can be materially assisted through the use of individually indicated lung gymnastics. The importance of keeping in a high state of cellular activity the respiratory passages can hardly be overestimated. The more we study and learn of the various exciting causes which produce diseases of the lungs, the more we are impressed with the need of maintaining them at all times in a healthful state. It is doubtless true that we are all more or less constantly surrounded and forced to breathe an atmosphere laden with disease germs which excite lung trouble. In order that these germs may not become centers for the production of lung diseases, we must combat their presence by the soil condition of the lungs, which should be in itself so strong and vitalized as to render it impossible for those germs to find a medium upon which to grow, and multiply and extend their activity throughout the respiratory channels. If we cannot at all times keep our lungs free from contact with infectious organisms, we should at least persistently strive to keep up the respiratory resistance to such a pinnacle of perfection that these germs cannot find lodgment and grow. The disease-producing germs or seeds are inert, and incapable of devolving disease unless they have a suitable soil upon which to grow. One of the most potent influences in rendering the respiratory tract unfavorable for the development of disease germs is the daily use of such gymnastics as will cause complete oxygenation of all of the lung cells.

I would advocate the frequent daily exercise of deep inhalations of pure outdoor air. These should preferably be taken in a place as free from gaseous or mechanical impurities — such as smoke, soot, or dust — in the air as possible, and while the sun is shining. With the mouth closed, and shoulders well thrown back,

inhale slowly through the nose all of the air which the chest can comfortably contain; then slowly exhale. If unaccustomed to deep breathing, at first there will be an uncomfortable feeling of dizziness or mild vertigo experienced. This sensation is due to the unaccustomed dilatation of the air cells or vesicles by such a volume of air. A little judgment in the daily exercise of deep breathing, which should never be persisted in to a point of discomfort or pain, will soon overcome this sensation. By degrees there will be noticed an increased expansion of the chest wall. The feeling of invigoration, tone, and elasticity, as well as buoyancy, which will soon be experienced will more than compensate for the efforts expended. Oxygen is our greatest agent for expelling respiratory waste and placing the respiratory tract in a condition to resist disease.

STOMACH.

Preservation of the voice is largely dependent, not only upon its proper use, but also on keeping the stomach in a healthy condition. Particularly severe in its effects upon the vocal organ is the use of the voice when the stomach is unduly distended by a hearty meal, gases, or the irritation which arises from hyperacidity. Intra-abdominal pressure is always exerted in the direction of the least resistance. The stomach will abnormally crowd itself upward upon the dome-shaped diaphragm, and so unduly forces the lungs into the upper chest. From this we have undue pressure upon the ramifications of the bronchial tubes, and these cause abnormal pressure upon the trachea, and so induce a congestion of the intra-laryngeal mechanism.

That state of the stomach where there exists acute fermentation of the stomach contents results in the production and elaboration of numerous forms of poisons, known as toxins. The action of these toxins upon the mucous membrane surfaces is to produce an excessive determination of blood to other surfaces. Then follows an acute congestion of the mucous membrane, to be succeeded by various inflammatory processes. The mucous membrane lining the air passages is easily irritated by gaseous eructation from the stomach. It is therefore readily seen that any

condition of the stomach wherein exists the conditions named must, through irritation to the throat passages, produce more or less marked deterioration in the quality, strength, and tone of the voice. It is a well-known fact that noted singers or speakers aim to avoid any technical use of the voice for at least two hours succeeding a hearty meal. The reason for this is sufficiently obvious. Purity of the voice demands a high degree of physical perfection. Aside from the improper use of the vocal organs, and chronic catarrhal conditions of the nose, throat, and larynx, I consider diseases of the stomach one of the most important influences in bringing about impairment of the voice. Therefore, preservation of the voice can be materially assisted through keeping the stomach in a condition of physiological perfection.

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EDUCATION THROUGH MUSIC.

In a well-known city recently a conference appointed a committee "that should consist of educators and musicians." So large a term as "educator" was evidently not broad enough to include the music teacher. The term "art" should be capable of including music, and yet how often we hear "music and art"! Why is it that words covering so wide a field in both the practical and the æsthetic side of life tend to exclude music? The reason is that the term "music," which covered so much of education with the Greeks, has through the process of differentiation been gradually narrowed down, until it means the manipulation of an instrument, including the management of the human throat; or learning the notation of music; or the science of tone-structure. Music has thus become dissociated from practical life. Architecture is closely related to housing and protection from weather. Poetry often expresses the thought better than prose, and so has its use as an enlightener. Painting often expresses the situation better than any description. Even sculpture may have its practical uses in helping us see ourselves as others see us. But, owing to the peculiar nature of music, it is difficult to relate its studies to any of the necessary activities of life.

Music, above all arts, exists for the sake of the pleasure that it gives; so that education in music means a preparation for either receiving or giving certain kinds of pleasure. If we consider the term "education," we find that it means, pretty definitely in its public-school use, a preparation for life. The geography and arithmetic, reading and writing, language and history, all take their significance because of the preparation they give for the serious problem of making a success of life. Whether these studies should be taken up or not is a question, not of choice or aptitude, but of necessity. The child must experience the discipline and learn the facts, whether or not he likes to. His success in life depends very largely upon how well he does this.

When one considers the keenness of the struggle for success, and how the poorly prepared are constantly going under to make room for those who are better prepared, one realizes that there is a moral pressure behind the usual studies of the school that puts the pupil into an attitude toward them entirely different from that which he has toward music. For the study of this art, even above all other arts, is purely for the evanescent pleasure gained.

This change of moral purpose toward music study brings with it a radical change in the treatment of the study. If the sole end of music is to please, the more pleasure it gives, the better it serves its end. As naturally the pleasure is connected with the form that excites it, the technique through which that form is expressed becomes the goal of all musical effort. However inconsistently we may act, we are all willing to admit, in our sober moments, that pleasure is not attained by its direct pursuit; and this holds as true in art as in life. That art which seeks only to please soon fails to do even that. Nine-tenths of the modern theatrical performances aim to please at any cost. Yet, in spite of the wonders of scenic effects, of orchestration, of acting, and of pantomine, how dreary are most of the efforts! It is not that art has a mission beyond that of pleasing, but that it must please the whole being. The art that aims only at the sensuous fails to do this. The art of music, after being dissociated from everyday life, and having been emptied of all serious content, has been pursued with all the energy and inventiveness characteristic of our modern times, to extract the last drop of pleasure capable of being drawn from the development of its technique. Thus the serious music teacher in the public schools, where the study of music is carried on for its own sake, and not as a profession, has to contend, not only against the lack of serious purpose toward the art, but also against a positively vicious demand with reference to it; one placing school music on a par with the vaudeville show. Art must thrill the senses and astonish the mind, but it must not challenge thought. That must be reserved for the serious problem of money-getting, the keeping one's head above the whirl of competition! Art must supply the oasis in the cool shade of which the weary traveler may forget the desert of existence. This is a

legitimate demand, and was never more needed than now. But art must appeal to our whole nature. The youth is not particularly longing for rest, but to be stimulated and given vision. Effort and concentration of the whole being are demanded. This is lost sight of by the purely entertaining and restful aspect of art. The difficulty is that the modern has so emptied art of its serious content and, in his effort to make it entertaining, so exaggerated its technique that, instead of being an oasis of refreshment, it is too often a wild orgy of excitement, screwing the weary nerves to a still higher tension.

In public-school music, which reaches the masses as does no other art, the true educator has an opportunity at hand with which to improve the attitude toward art, giving it a dignity that will enable it to serve our whole life, its serious moments as well as those of relaxation. Certainly the social life of the day shows the need of this deeper ministration of art. With the overcrowding of our rapidly multiplying insane asylums, and with a nervous cripple in almost every home, the opportunities that art gives as an oasis in which to get inspiration as well as rest should be taken more seriously. The very fact that it has no practical side makes it the art above all others most helpful to the modern, if properly approached.

I will suggest the principle that underlies this approach, and three ways in which it may be realized, as conditioned by the varying amount of time given to the subject in school. Take, for instance, a song in praise of spring. Instead of using it as an excuse for producing sweet sounds, use it for the purpose of expressing the pupil's love of spring. Notice the difference that this change of standpoint makes. The tone must not be merely sweet, but it must express the real joy that spring has so often awakened in the pupil's heart. To produce this, memory and imagination must be full of the thoughts and images of spring, for, without this, tone will not take its true quality. The child is not the cultivated artist, having the beautifully placed tone, capable of being produced on demand, but his tone depends upon the natural expression of right feeling, where the thought is focused on what is done rather than on the method of doing. So

with the pronounciation of the words. These cannot be treated as excuses for vowel tones. They are expressive of a picture the poet has felt, and are the source of the stimulus that is exciting the pupil's imagination. Hence they must be thoughtfully uttered. So with the singing of the melody. It has its spring story to tell. Phrase and cadence must be true to the telling. Imagination, thought, memory; the brain alert with the activities of the eye, ear, and throat; the inner world of feeling all astir and alive — there is no better educative process than when music is thus treated. What opportunities for observing, for vivid imaging, for telling the truth, for delicate motor control! If all the relationships that focus in one beautiful song could be worked out in this way, the result with reference to the education of the pupil would be as great as the result in knowledge of which the poet spoke when addressing the flower in the crannied wall.

Taking self-expression as the guiding principle in music work, let us see how it may be applied, first with reference to schools, where a minimum time is given to music, say one or two short periods a week. Under such conditions songs learned practically by rote will supply the material of instruction. There will be almost no purely musical instruction, if by that we mean notation or the structure. But if the work is done as illustrated above, it will have educational value. The musical opportunities open to the pupil will be extremely limited, as judged from the standard of modern technical proficiency; but, as judged from that of musical feeling, they need not be on a plane lower than the feeling that has created the lovely folk-music of all nations. So much when the minimum time is allowed.

Second, where a little more time is given, but still not sufficient to make a daily, serious study possible, I would supplement the rote-song singing with instrumental work. It is too bad to leave our school population with this, perhaps the larger part of modern music, almost totally unrepresented in its scheme of study. If sufficiently good players are not at hand, the various mechanical attachments can do for music quite as effectively as the photograph and projection lantern do for so many other arts and sciences. To train the growing youth to an intelligent hearing of

a Beethoven symphony or a Bach fugue is to widen his resources with reference to his future enjoyment of art much more than can be done with an equal amount of time spent on what is called "sight-reading." To follow sufficiently for a large satisfaction the intricacies of an invention or a fugue, or to observe the logical relationship of a symphonic form, is not as difficult for the average musical intelligence as to conceive of a chromatic harmony from its staff notation, and it leaves infinitely more in thought and content than does the latter kind of work.

Third, when the dignity of music as a serious study is realized and daily opportunity is given for careful work, the study of music as self-expression can be fully taken up. Starting its complex rhythms in the simpler and more easily understood forms in which rhythm is expressed, as in movement and language, constantly keeping self-expressive principles in mind, the teacher can lead from the expression of rhythmic thought to its further expression in tonal thought, and through this self-expressive activity conquer the complex difficulties that stress, duration, and pitch represent, both with reference to conception and definition, as well as to its expression in notation or reproduction in tone. Such a treatment of music relates it to physical culture on one side, and to English on the other. The speaking tone and what is uttered, as well as the vocal tone and the physical conditions necessary for its adequate production, must all be closely related, if music is to be fully utilized as the art of self-expression.

The principle of self-expression in art puts the stress on what is done rather than how it is done; on content rather than on technique. In doing this, it develops the individual from within out; helps him to realize himself and to add his own contribution to society. It is the very opposite of the tendency of most of our public-school work, the aim of which seems to be to shape the minds, as the tailor does our garments, according to the fashion of the times. This suppresses all originality and creative impulse in order to turn out pupils up to a uniform standard. We do not object to the standard; a common knowledge is necessary; at the same time, the individual benefits society in the degree to which he contributes something that is his own.

The constantly increasing elective courses in our colleges give an opportunity for developing the personality of the individual; but where the college is helping this principle for students who have entered its halls, it is hindering it by the constantly increasing rigidity of its entrance examinations, requiring a dead level of uniform work just at the age where the true personality is finding itself, and where, if any work on the art side of our natures is to be done, it must be done immediately. Education through music, requiring as it does expression by means of poetry, acting, and speaking, as well as through the singing-tone, develops the inner life. It will make the individuals of society differ from each other. The mental life of society, instead of resembling a vast plain, its every acre taken up with the production of the necessaries of life, will have its lesser as well as its greater peaks and summits, which catch for the dwellers on the plain the morning glow of hope or the reddening promise of sunset, and send down fresh streams of inspiration to gladden all its members, even the humblest having sufficient intelligence to drink and be refreshed.

Music, because of its impractical nature and its slight technical demand for expression, and at the same time its wide demand on body and mind for its adequate realization, proves one of the best studies for developing the inner as against the outer and formal side of life. But it will not do this unless it is taken in the spirit of self-expression, rather than that of entertainment.

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SIGHT-READING FOR NORMAL AND SUBNORMAL CHILDREN.

I SHALL endeavor to show in this paper how material may be chosen to meet the needs of both musical and unmusical children in a class, and how the simpler tasks suited to the latter may be alternated with the more complicated ones suited to the former, that they may occasionally meet on common ground.

The proportion of musical gift in a class is an index to the difficulty of the teacher's problem in keeping alive an interest in the formal work in music. The carefully graded steps which almost all systems in school use present, while theoretically good, are designed for those children whose natural love of musical expression furnishes a motive for acquiring musical knowledge. Such children give an eager and ready response to any problem within their grasp, grappling with it and solving it. For the unmusical minority, however, who are to join in the work of the class, and yet who are shut out by present limitations from musical satisfaction, what supplementary work can be found which will awaken and conserve the dawning interest in music through the necessary periods of drill? What will best avoid the discouraging obstacles which beset the way of deficient melodic sense?

Our aim is to send each child on to the secondary work with a love of musical expression and an ability to get at the meaning of the printed page; but this object will be attained only so far as the child's own motive has been aroused along the way. Parrot repetition contributes nothing to his education. On the contrary, unless he has been aroused to independent thinking, the apparent knowledge which he may gain will not remain with him. Boys and girls below normal in their musical gift come to the higher grades having performed the usual musical tasks set them through years of school work, not only without the power of handling symbols, but with a settled conviction that they never

can acquire such power. This condition of mental inertia is a proof of unwise treatment. Not only has progress been in some way retarded, but development has been checked. Musical tasks, like all others, which have been unrelated to his own desire to reach an end are drudgery to the child.

The teacher's first task, then, is to find means to stir the dormant interest of the unmusical child, to present something which shall catch his attention and bring to his consciousness that which is ever present with the musically gifted child — ends to be reached worthy of effort.

Of first importance in awakening and maintaining this interest from the kindergarten up through the school is the rote-song. Learning a rote-song is common ground for all grades of ability. Properly chosen, it appeals to musical and unmusical alike. Dramatic, sweet, simple, dignified, or merry, with some connection in its subject with the work or environment of the children, its author perhaps known to them through their literary experience, or its composer one whose songs they have sung, there will be some point of connection which may be emphasized. Presentation along the line of its dramatic interest will be most liable to meet with a response from the entire class. Any possible device which enhances the literary charm of the song, creating an interest in the minds of the children, will minimize the sense of its difficulty and call forth spontaneous efforts at expression. They will themselves perceive that, in uttering the text in melodic phrases instead of in spoken tones, the object is to beautify and enrich it; if its meaning is not brought out and illuminated, the singing has lost its purpose. From this standpoint they will understand the necessity of work in enunciation, exact intonation, phrasing, and expression. That a hard, harsh tone is not the medium of expression for a pleasant thought is self-evident, and strident, overloud singing corrects itself largely by an appeal to the children's own sense of fitness. It is frequently the case that the unmusical child, unconscious as he is of limitations, enters into the singing of such a song with more energy and zest than do the others who are able to conceive its melodic difficulties. To lead him to a sense of his deficiencies, and yet retain his enthu-

siasm in the singing of the song, is a work of infinite tact. Where it is possible to have a special chorus of the musical children, that their efforts at expression may not be handicapped by the monotones, it seems but justice to form such a one. But the free utterance of the latter should not be discouraged, however faulty it may be. The teacher must preserve their interest at any cost of impaired result.

The first step in helping monotones to a wider range is to convince them that their voices will go as high as those of the other children. A dramatic situation suggesting a phrase to be spoken with vivacity and sweetness to someone at a distance, as "I see you!" has in its highest inflection carried an obstinately low voice up to the G above the staff. The idea is usually amusing to the child, and before the subject is left he is convinced that his voice has a wider range than he had supposed. Thereafter he sings with greater variety of pitch, and will enter with more courage upon the labor necessary to acquire correct intonation.

The thoroughly learned rote-song as subject-matter for lessons in sight-reading and notation is valuable to those pupils who can really comprehend it. The familiarity of these children with its melody creates an interest in seeing its staff-picture. They sing it from this picture with a keen observation of the movement of its intervals and sequences; fitting the syllable names to these makes the image still more vivid: and at length, having imbibed a sense of its construction, they will find themselves able to write the melody. The accomplishment of such a task gives a sense of growing power, while repetition of the process, using songs in all the keys, will lead the child, able to cope with its problems, by a natural path into a free handling of song symbols.

To force the subnormal children to follow the same path would mean an unwise expenditure of energy on the part of both teacher and pupil. Simpler tasks must be found for them, such as will contain problems appreciable to them and capable of being successfully handled. The prolonged drill necessary to bring these children up to the attainment of the others, even if it were possible to do so, would crush out the love of the song so carefully fostered and lose the musical impetus gained thereby.

Whatever the material used in leading children to read music, the same foundation is necessary — a thorough acquaintance with the syllables of the scale. Their use begins easily in the kindergarten, where the small people in learning their tone-ladder may learn at the same time its *sol-fa* names. Later, exercises for tone-placing and quality may be given by means of the scale with each syllable beautifully spoken. Various interval exercises based upon the scale ascending and descending are useful, as follows: *do, re; do, mi; do, fa; do, sol;* etc.; also *do, mi; re, fa; mi, sol; fa, la;* etc.; also in fourths, as *do, fa; re, sol;* etc.; and sixths, as *mi, do; fa, re; sol, mi,* etc. All of these may be varied and made more interesting by the occasional use of a piano accompaniment, for drill must not become drudgery. The fact that melodies, however unlike they may be, are composed of various combinations of these same scale pitches makes it evident that each pitch must possess individual qualities. To discover what these qualities are, and decide which would be best fitted to express the sense of a joyful text, and which that of a sad one; also which it would be possible to rest upon, and which would give a sense of completion to a song, etc., is a task of interest to all the children. Frequent repetition of the tone under consideration in a phrase or melody, especially ending the phrase on a given pitch, leads them to a definite sense of what it conveys. The least musical child will recognize the difference in emotional quality between the broken triads *do, mi, sol;* and *re, fa, la,* when led up to by this approach.

It has frequently been my experience that the first intervals of which a tone-deaf child can be unfailingly sure are these two broken triads. The intellectual comprehension of their meaning has seemed to awaken the tonal sense. Having found these to be thoroughly the child's own, the teacher will be able to use them as a base of operation. They will form a point of departure in the work of giving him control of other intervals, while preserving his affirmative attitude of mind toward sight-reading. Having found these broken triads in the written scale, he can himself write them in their first position on the staff, at first by the aid of the scale, afterwards from memory. The last step of

this phase of his work is to take them by dictation so combined with parts of the scale as to form a tune which he can read; as, for instance:

No. 1.

No. 2.

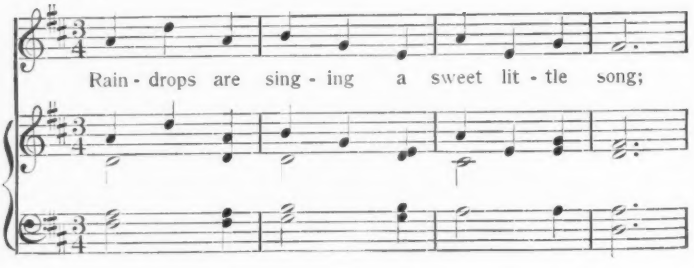
Simple as these melodies of necessity must be, the sympathetic teacher will put into them all the sweetness of touch and tone at her command, to enhance their value to the child and make it a matter of moment to him to have been able to sing them in tune. Such exercises, varied as far as compatible with retaining the triads which furnish him a foothold, if reverted to frequently in the course of the more difficult work of the class, will preserve the initiative of the backward children, and give a sense of musical self-respect which is most desirable.

The simplest material for leading them through the keys follows. The method of procedure in each case would be the same: first, writing the scale; second, indicating the "joyful"

triad and the "sad;" third, writing these ascending and descending; and, last, reading the exercise. Difficulties would be added to the simple melody at discretion. In my experience, the children have occasionally wished to give words to these, and have collected them in their practice-books under the title of "Half-Hour Songs." The practice in notation which this included has been useful.

No. 3.

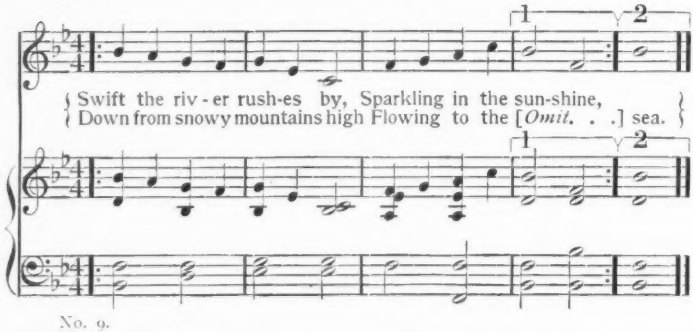
No. 4.



Pat - ter - ing, pat - ter - ing all the day long.
No. 5.
No. 6.
Snow-flakes fair Fill the air, All the world is white and gleaming;
Sleds are out, Chil - dren shout, Coast - ing time is here.

No. 7.

No. 8.


1
2
Swift the riv - er rush-es by, Sparkling in the sun-shine,
Down from snowy mountains high Flowing to the [*Omit.* . .] sea.
1
2

No. 9.

No. 10.

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HABIT AND ELEMENTARY WORK IN ENGLISH.

In elementary classes it is desirable to keep in mind the distinction between what may be called the objective and what may be called the subjective aim of language-teaching. Language is taught from the subjective standpoint when the culture *per se* of the pupil is the primary aim. This is the old humanistic ideal: language is viewed as a disciplinary study for the development of the distinctively human faculties. Hence the pupil is introduced at an early age to language as a science — to the study of grammar and to conscious literary analysis.

Whatever may be the value of the humanistic or subjective ideal in the teaching of language to the favored few who are looking forward to the college or the university, it seems to me that there can be no question as to the advisability of keeping in the foreground the objective aim in the teaching of language in public elementary schools. Language is taught with the objective aim in view when it is taught chiefly with reference to its use as a medium of communication with one's fellow-beings. To teach the child so to speak, read, and write the English language that he shall be able to understand others, and to make himself understood by them — this should be the primary aim in the teaching of language in American public schools. It emphasizes the social, rather than the individual, value of language. It views language as a tool whereby the subject-matter of thought is fashioned into a shape intelligible to others.

It is hardly necessary to say that this, the objective ideal, necessitates the teaching of language as an art rather than as a science. The child is to be taught to speak, read, and write the vernacular tongue, and from this standpoint it matters little whether, on his graduation from the elementary school, he knows *why* such and such forms of speech are correct. At this stage the science of language will not aid the child in the practice of the art of correct speech; you remember the disastrous results, to the centipede, of reflections upon the *science* of locomotion.

If language is to be taught as an art, it follows that a most important rôle must be assigned to habit. All arts may be viewed as good habits in some special line of constructive activity, the language arts no less than any other. The elementary teacher cannot too often say to herself that her pupil can learn good English only by reading, writing, and speaking good English until it has become a habitual reaction.

One of the most valuable of the recent contributions to the psychology and pedagogy of habit is to be found in Mr. Frank C. Bostock's book, *The Training of Wild Animals*. The chapters called "The Wild Animal's Kindergarten" and "The Principles of Training" are full of facts highly suggestive to the trainer of little human animals. Says Mr. Bostock:

> In time the trained animal becomes so accustomed to performing that when he sees the paraphernalia of his performance he knows exactly what is expected of him, and does it naturally and readily. The successful performance of all trained animals depends on this almost instinctive following of long-accustomed habit. . . . . No animal is ever allowed to backslide. Each thing done one day must be done the next day in exactly the same way. . . . . This is the reason that in every animal act the trainer positively insists upon perfect adherence to the regular formula. Such is the force of habit that laxity today means a desire for laxity tomorrow at the same place and in the same way, and laxity in one small detail will breed the tendency for it, which will then in all probability spread, and in a short time affect the whole performance. . . . . If an animal is sent to the right side on entering the arena the first day, he must be sent to the right side every day thereafter.

So strongly established does habit become that accidents have been averted by taking advantage of long-continued associations. In one case a lion, in the act of devouring his trainer, was checked by the presence of mind of another trainer who fired his revolver twice near the lion's ear — the long-established signal for the lion's pose in the arena. Habit was stronger than rage: the lion dropped his captive and fell into "position."

If the teacher in the elementary school could realize that her most important function is that of "trainer," not "expounder;" if she could sincerely believe that insistence upon accurate "doing" brings as good results in the primary school as it does in the "animal' kindergarten," the results of language-teaching

would be much better than they are at present. The work of training is a slow one, but in the end it justifies the tediousness of the process.

Oral discussion of class work — whether of nature-study, manual work, history, or arithmetic — the reading of interesting books, and even the copying of stories and poems worth remembering — these are some of the ways by which good habits in the use of language may be impressed upon the brain-cells. The child who has habitually written and spoken the verb-form "have seen" is more likely to give his perfect tense correctly than the child who has merely learned the conjugation of the verb. Hence the value of such a seemingly mechanical exercise as the mere copying of stories and poems. In *Cuore*, that beautiful record of the heart of an Italian schoolboy, the children copy every month a story embodying some ethical ideal. Even leaving out of the question the ethical benefit derived, the device is an excellent one for drill in sentence-structure, punctuation, capitalization, and collocation of words. The child's interest in the story deepens the impression made by the details of the language.

I believe that English is best taught when it is subordinated to some interest that is strong within the child. Is the boy interested in making little sailboats? Let him talk and write then, by all means, about sailboats; and let him think that he is giving information about sailboats rather than learning to speak and write English. As a child is best encouraged to walk, not by having his attention directed to the muscles involved in the process, but by having a definite goal before him — an apple or a candle — so, a little later, he is best taught English by having some extrinsic end presented: in reading, the outcome of the story; in talking and writing, the opportunity to tell others of a fact interesting to himself.

If I may revert to the psychology of animal-training, I should like to call attention to the extreme care exercised by the trainer in the determination of the order in which new accomplishments are taught. If the elementary teacher is to be successful in establishing good habits in her pupil in the use of English, the more difficult tricks — to use the trainers' vocabulary — must not

come first. In the natural process of development, both ontogenetic and phylogenetic, the art of oral speech long precedes the arts of reading and writing. Much time would in the end be saved if the first year or two of school were devoted to the learning of English as a spoken language. The resultant habituation to proper oral forms and the acquisition of a stock of fairly clear concepts would greatly lessen the labor of learning to interpret mystic black marks on a white page a year or two later.

Another consideration in connection with the order or sequence of the establishment of habits in English is that of the order in which the child's concepts develop. The anthropologists tell us of primitive races whose vocabularies include words for "dog's tail," sheep's tail," "bird's tail," but no word for "tail." The child, like the race, arrives at the more generic concepts very slowly; and it is therefore desirable that the vocabularies of the early reading-books include not too many words which are likely to be meaningless to the child. *Gradation* should be the motto in language-teaching.

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THE HISTORY OF THE VERNACULAR IN EDUCATION.

II.

WHILE the vernacular and its literature, especially among the learned classes, were threatened with destruction by the first shock of contact with the newly discovered classics, there were forces at work which tended to keep them alive and to make them ultimately reap advantage from that which at first seemed to be their doom. After a shorter or longer period of decline, the vernacular experienced a period of renascence in all the countries of Europe. In Italy, where the native idioms lay closer to the Latin, the decline of the vernacular was most marked and its period of longer duration. But even here there were subtle and pervading general influences at work in favor of the vernacular. If scholars looked down with contempt upon the vernacular and its use, still it had become rooted among the common people. It was a living tongue as over against a dead one, and as such possessed a superior power of absorption. The Latin phrases introduced into the Italian dialects by scholars could not take root among the people until they meant something to them, and thus they could never become among the common people such an external part of the language as among scholars. They could not swamp the native idiom; for they first had to adapt themselves to it in an organic fashion so that they functioned in it. Thus by a process of selection the native idiom profited at the expense of the Latin, and quite naturally at just such points as it most needed supplementation in respect to vocabulary, polish, or grace. But the Latin element came in not in an integral fashion, but only by yielding to the genius of the Italian idiom. It was Italianized rather than the Italian becoming Latinized. Scholars found out that if they wanted to be heard by the common people, Latin vocabulary and imitation of Latin structure and style did not count for much. They must digest their classics, assimilate them, and develop new

blood and tissue vitally and organically one with the vernacular which they proposed to use. What is said with reference to the development of the vernacular under the Humanistic impulse in Italy may be applied with varying emphasis to the other European countries subject to the influence of the Revival of Learning.

The renascence of the Italian vernacular did not begin with the scholars. The learned had been drawn away to the study of the classics, and they wrote for a more select and a more universally distributed circle of readers than could be reached through any one mother-tongue. But the people still loved their songs and stories; poetry, music, and devotion are interests that do not wane. Obscure writers, with little or inadequate training in the classics, appealed to the popular interests and attempted to meet the popular demand. Yet this humble class of writers drew gradually into their circle those of greater training and ability.

The gap between the scholars and the people, between the learned and the unlearned, so far as concerns the field of literature, was again beginning to narrow, and the time was drawing nigh when scholarship should not be ashamed to express itself in the mother-tongue. In addition to the pressure from below, that time was hastened by another co-operating factor, namely, the patriotic impulse.

Social and political influences cannot be ignored in the literary and educational history of a people. At Florence, Ferrara, and Naples there was a court life which gave unity to the popular consciousness which centered in those places. At Naples and at Ferrara feudalism had taken firmer root than in most other places in Italy. There the literature of chivalry lingered. The tales of Charlemagne and of King Arthur served as a strong central core of the popular literature. It was not so easily overwhelmed by the first tidal wave of Humanism, and could more easily obey the impulse of the strong feeling of civic unity. At Florence, under the influence of Lorenzo de' Medici, the cause of the vernacular received a strong forward impulse. Lorenzo himself employed the vernacular, yet with an apology for its "lowness, incapacity, and unworthiness to deal with high themes or grave material."[16]

[16] SYMONDS, *Renaissance in Italy*, "Italian Literature," Vol. I. p. 234.

With Lorenzo de' Medici Humanism advances under the impulse of a new ideal. The discipline and the fine sense of literary appreciation which came from the study of the classical models were made instruments, not of slavish imitation, but of positive reconstruction. Scholars begin to see that in order to produce a work of art the medium does not necessarily have to be that in which the great works of art have been produced in the past. The medium is something which can be molded to use, provided there is a clear grasp of literary principles. Under the spirit of the new Humanism, the prose and the poetry of the Italian language are transformed and beautified by the application of the ideal of classic form. The literature and the language are no longer Ferrarese, Neapolitan, nor Tuscan, but Italian; no longer local, but national. The gulf between the scholar and the layman narrows down until the two classes of literary interests merge once more. The popular tongue and the popular theme resume their place in the world of literature, only on a higher plane of art. Poets of the first rank took up the material of the popular literature, molded it in accordance with the principles of art, and gave it out in the form of works bearing the stamp of culture.[17] With Ariosto and Machiavelli the stage had been reached in which there was certainly no longer any occasion for, or thought of, apology for the use of the vulgar tongue. Its literary position was thoroughly established.

In England art had achieved distinction in the vernacular through the genius of Chaucer. But for a century and a half from his time the vernacular literature languished. One reason for this was undoubtedly the condition of the English language. English, more than any other tongue, is a language whose vocabulary is filled with borrowed words. In the fifteenth century it was suffering especially from a plethora of undigested material, which made it more or less of a mosaic.[18] The inherent laws of its structure had not yet reached maturity, and they groaned under the task of plowing their way through the heterogeneity of its vocabulary. Yet, during this period, English scholars cherished the study of

[17] *Ibid.*, p. 427.

[18] See SAINTSBURY, *The Earlier Renaissance*, chap. 4.

the classics,[19] and through them were educating a higher capacity for culture. But the gap between scholarship and the vernacular seems never to have been so wide as in Italy. In fact, the stream of Humanistic influence came to England from derived sources as well as from the original.

From the fact of this twofold source of Humanistic culture in England, it happened that two men so wide apart in their type of training as Milton and Shakespeare could both be representative of the renascence of the vernacular literature. Milton, drawing directly on the original classical sources, brought the ideal of classical beauty and perfection down into the vernacular, fusing both elements into an indissoluble whole; "he was classical without loss of spontaneity or freshness." Shakespeare, on the other hand, drank in the spirit of the Renaissance as it had manifested itself in the stimulus which it everywhere gave to a higher type of art; and, through the assimilation of this ideal, he brought up the vernacular literature to the classical level. The tremendous literary activity of the Elizabethan period is significant of the supremacy of the mother-tongue henceforth in the literature of England.

In bringing about this literary supremacy of the vernacular in England there is still another factor that ought not to be overlooked, namely, the publication of the King James, or Authorized, version of the Bible, in 1611. The linguistic principle common to both Shakespeare and the English Bible was that of starting with the vernacular, and, working under the inspiration of superior models, bringing up the vernacular, by the selection of those elements which are already prepared to function anew, to a new level of art. Thus the linguistic laws of the mother-tongue are not violated by the imposition of a foreign structure, however superior that may be within its own field.

In France at the end of the Middle Ages poetry had received considerable development, and the lighter forms of narrative prose were beginning to be cultivated. But the language was as yet wholly inadequate to the expression of more serious and reflective thought.

[19] *Cambridge Modern History*, Vol. I. "The Renaissance," p. 491.

The problem of the sixteenth and seventeenth centuries was to take up this language which was now in a transitional stage on the way from the inflectional to the analytic form and make of it an adequate vehicle for the expression of any and every kind of thought.

One important factor in the perfection of the French vernacular was the movement inaugurated by a group of writers called the Pleiade. The Humanistic movement was consciously diverted from its original channel and made contributory to the cause of the vernacular. The study of Latin and Greek was prosecuted for the sake of finding what these languages had that could be carried away and used in the enrichment of the language and literature of the mother-tongue. Long and persistent practice in the writing of French was conducted under the ideals of art discoverable in the best authors, whether Greek, Latin, Italian, Spanish, or any other language.[20] With Ronsard and his confrères the study of the classics became a means to the perfection of the vernacular rather than an end in itself. The function of this sort of work cannot be easily overestimated; yet it is easy to see that, after all, such a movement may not come into the closest and most vital relation to the life of the people, and hence may diverge slightly from the true genius of the native tongue. It needs to be supplemented by the work of men who have an overmastering message to convey to the people. The perfection of the language cannot be reached until it has been made the medium of expression for the ideas of such men as Calvin, Descartes, and Pascal.

Calvin's vocabulary is rich and varied, but his words are drawn largely from the mother-tongue. They are words instinct with the life of the vernacular — words either Gallic, or, if from the Latin, preferably those which have gained the quality and tang of the native idiom through their having already functioned in it. Yet at the same time he is strongly under the influence of classicism. The ancient languages have a contribution to make to the modern French through his agency. The French tongue was especially defective in the treatment of clausal rela-

[20] SAINTSBURY, *Short History of French Literature*, p. 199.

tions. Its structure was loose and ill adapted to the close and logical sequence of thought demanded in argument. Now, Calvin was a close thinker, and he was anxious that his thoughts should reach the people. He chose the most vital words that they used, but a loose and conversational array of these, no matter how rich in meaning or how delicately susceptible of expressing fine distinctions, was inadequate to the expression of his thought. He needed a structure the parts of which made up a close-fitting and organic unity. The Latin language afforded models of almost logical perfection in the matter of sentence structure, in the delicate adjustment of independent and subordinate relations within one finely balanced whole. Calvin succeeded, without undue violence to the spirit of the mother-tongue, in introducing into it something of the power of expressing clausal relations with which he was familiar in Latin. The long sentence, so often necessary in the expression of complex trains of thought, became possible, and that too without violation of clearness and simplicity.

With the work of the Ronsardists and Calvin, the French language is in the process of taking its position as a literary tongue. It is not a far reach to Descartes, Corneille, and Pascal, under whom the French vernacular won its position of complete literary independence, yielding alike to the demands of the highest reaches of philosophic and scientific thought, and to the subtlest and most refined poetic sense.

The German language as a tool of literature was even more defective in the sixteenth century than the French. Practically everything of consequence was written in Latin. Translations of the Bible, in whole or in part, together with other religious and devotional literature in the mother-tongue, circulated to a considerable extent. But with the advent of the Reformation there was brought over to the cause of the vernacular a powerful and interested advocate in the person of Luther. Luther's translation of the Bible, like the English version, took advantage of those forms of speech which had already found acceptance with the people. Yet his task was more arduous than that of his English brethren, because the language was in a more chaotic condition.

Luther was a prolific writer and speaker. He, like Calvin, was burdened with a great message which must be brought to the people. If the language was not yet adequate to this task, if its structure was defective, then he took up the obdurate instrument of expression and twisted it and turned it until it would yield to his will. His ideas were vigorous and strong, and they had to find expression in a form which was vigorous and strong. To be sure, the forms which he wrought out were not always elegant and refined; but they were pretty apt to be suitable to the thought which he wished to convey. His terse and strong and homely thought plowed through the resisting material and left its furrows there as a guide to others who wished to go the same way. He almost re-created the German language, and he prepared the way for its more refined as well as its more vigorous use as an instrument of literary, scientific, and philosophic expression.[21]

Luther, Calvin, and Descartes illustrate the power of function in determining structure. Too often we ignore the significance of thought itself as a factor in determining form. The history of the vernacular teaches us that the language process goes on within a situation in which thought demands a medium of expression. The message, the desire to communicate, is one of the chief interacting factors in the development of language. In general, vigor of language, refinement of diction, elegance of style, can come into being only where thought possesses the same qualities. While, on the one hand, thought is dependent on a proper medium, on the other hand, the medium of expression is itself a creation and reflection of thought.

By the seventeenth century (earlier in Italy) the literary position of the vernacular was established generally throughout Europe. But, while the vernacular began to reappear in the sixteenth century stronger than ever before to perform the function of a real language, we find at the same time, as we have already seen, Latin everywhere dominating the schools. That this should be the case during the period of the gross inadequacy of the

[21] See SAINTSBURY, *The Earlier Renaissance*, chap. 5; RUSSELL, *German Higher Schools*, chap. 2; *Cambridge Modern History*, Vol. I, "The Renaissance," pp. 640 ff.

mother-tongue is not a matter of surprise. But that Latin should persist as the chief instrument and end of education for centuries after the strength of the vernacular has been manifested in the realm of literature does seem at first thought a just ground for astonishment. But we must bear in mind that the school is necessarily a conservative institution. It has to stand for the highest ideals of culture and discipline. It does not at once adjust itself to that which is new; or, if it does, it is the victim of innumerable fads. The new has to be tested, proved, and found worthy. This was all the more true when the school stood in a position of greater isolation from the stream of popular and practical life than it does today — when the ideal of education was formal discipline and its end was not so much to make citizens of the many as to make scholars of the few. When the mother-tongue had come into wide use as an instrument of literary activity and its literary position was more or less firmly established, still it was not welcomed in the schools of the day. The vernacular could not yet show that its masterpieces furnished literary models which attained that degree of perfection which characterized those already in use in the schoolroom; and the native tongue was not regarded as an equal to the Latin as an instrument of mental discipline. On the basis of these two principles, Latin prolonged its monopoly of the curriculum beyond the period of its necessity. The cause of Latin was still further strengthened by the fact that men who wrote books, and who thought that their ideas were really valuable, wanted them to reach the world in a form which was more permanent and universal than the rapidly changing and numerous native idioms.

Notwithstanding the strong position of Latin in the schools of the sixteenth century, there was a growing feeling of discontent with the reigning Humanistic education. Even representative classical scholars like Alberti, Erasmus, and Melancthon recognized its insufficiency. Geography, mathematics, astronomy, and natural science, the studies by which the Humanists themselves would supplement the training in Latin and Greek, while they were not at that time taught in the vernacular, were of such

a nature that they might be so taught. *Real*[22] studies in the schools strengthen any existing demand that there may be for the use of the mother-tongue.

In France, Rabelais and Montaigne were satirizing and ridiculing current education, and creating sentiment in favor of training which should be more practical and closer in touch with the needs of life. Likewise the English schoolmaster and scholar, Richard Mulcaster, in the latter part of the sixteenth century, was protesting against the exclusive use of the classical languages in education.

While undoubtedly a part of the defect of the classical education was in the formal methods of study, yet much also was due to its exclusiveness, or lack of breadth. The remedy which Montaigne suggested was in the line of broadening the curriculum. He urged the importance of history, and laid stress on modern languages taking precedence of Latin and Greek.

This bringing of the vernacular definitely to the foreground in education is indicative of a new ideal that is shaping itself in men's minds. It is the forecry in a long struggle of the *Realien* for recognition and ultimate functioning in a well-rounded curriculum which shall meet the needs of the many as over against the few.

The slowness with which the schools moved in the matter of correcting the evils in the traditional methods of education is shown by the fact that the protests which began to appear with Alberti in the fifteenth century are still to be heard in the seventeenth, and even down into the eighteenth, century. Francis Bacon (1561-1626) made vigorous thrusts at Latin and Greek as the sole exponents of culture. But more significant for the cause of the vernacular than this was the work which he did in formulating the laws of induction. Though his work in this respect was imperfect, yet it starts the movement which is ultimately to ground the sciences in their claim to recognition in the curriculum. This kind of enrichment of the course of study always contributes strength to the movement in favor of the mother-tongue. The Port Royalists, De Saci and Guyot, were

[22] The term "real" is used in this paper in its German sense.

also claiming that the study of Latin as conducted was a positive injury to those who wished to use their mother-tongue well.[23]

This general dissatisfaction with Latin and Greek as the sole educational vehicles, with corresponding stress laid on the importance of the vernacular, is partly traceable to an increased value placed upon the *Realien*. It is an age of discovery, invention, and the beginnings of scientific formulation. The world has broadened and deepened with great rapidity. The force of tradition and authority is being broken. There is something new being developed in the way of knowledge which is as worthy of being studied and taught as that which has been handed down by the ancients. The activities of the people of Europe, the experiences of life, have created a demand for, and set a standard of value upon, scientific, commercial, geographical, and historical fact. A new view of education is being developed. There is a groping after, a feeling for, some position in education for these new elements of knowledge which are demanded by the exigencies of the new and changed conditions of life. The isolation of the school is more keenly felt than it was when all of learning was summed up in letters and this learning was of use only to the few. The school is now out of joint with social conditions. There is tension, dissatisfaction, a problem to be defined. The focus of attention shifts to and fro between the disturbing element of the *Realien* and the old, fixed, and customary structure of the classics. With this shifting of attention to and fro there is corresponding confusion, discomfort, discontent. Pending solution, this discontent works two ways to the advantage of the cause of the vernacular. When it views the Latin as unsatisfactory, by the emphasis of reaction it throws stress upon the vernacular. When it operates in the direction of placing the *Realien* in the curriculum, it carries with it in this same movement the mother-tongue as the most suitable instrument for the imparting of instruction. The ideal in these is no longer that of cultivating style or of teaching eloquence; hence the superiority of Latin vanishes at a single stroke. In this way I think we can account for the discontent which, we have seen, prevailed with the reigning Humanistic system of

[23] CADET, *Port Royal Education*, pp. 8 and 163.

education, and at the same time the stress which the critics laid upon the vernacular. This discontent was the beginning of a movement which should not stop with mere protest, but was to develop into measures of practical reform.

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[It is hoped that Mr. Miller will extend these articles, bringing them down to the present day, and publish them in book form.— E. F. Y.]

AN EXPERIMENT IN TEXTILES.

THE work about to be described was the making of hot-dish holders by eight children of the second grade, aged six to eight years. The reason why it was made part of the school program was that it happened to be a problem in the social life of the children — one which they saw and felt, and one which made direct appeal to them without explanation or "presentation" by the teacher.

In planning it, the teacher's aims were (1) to give the children so much freedom that the conditions of work should present their own problems; (2) so to organize materials and processes as to give the greatest possible opportunity for initiation and originality; (3) to offer for choice such materials and processes as would bring the children in contact with suggestive and educative correlated subjects.

The children had been cooking out-of-doors in ovens which they had built for themselves, and in handling hot stones and utensils had felt the need of holders. Recognition of this need gave motive for all the work done, and made of it a social occupation rather than a "lesson in textiles." The children were asked what material they considered most suitable for the holders. This question made evident to both children and teacher the fact that they had little conscious knowledge of the qualities of fabrics, so they were given pieces of all kinds and qualities of textiles, with the idea of choosing the one best fitted to their purpose. During the examination and discussion of materials it was agreed that the one selected should be thick, and slow to burn. Examples of silk, wool, cotton, and linen were all selected because of their weight. Recognition of these different fabrics was then taught the children, and they were directed to compare them as to feel, smoothness, roughness, softness, and hardness, and as to luster or dulness. After some discussion, each child wrote on the blackboard the name of the fabric he considered best for the holder. As the words "cotton," "linen," "silk," and "wool" were all

new, they had to be taught and, till they were learned, the lesson was one in writing and spelling. Each child's written vote was read and discussed by every other child, not merely for the sake of teaching reading, writing, and spelling, but because the practice of record-keeping even in its simplest form gave definiteness to the work and satisfied a certain *business sense*, which is strong in children of seven or eight years. So long as records were useful in the working out of problems, the teacher recognized the earliest need of a record and gave to the children the means of making one. This need, followed step by step, helped to give the children, almost unconsciously, the power of writing, which became to them a means of expression and a help to clearer thinking. None of the children in this case learned to write any one of the four words so that they could reproduce it without help, but many of them learned to recognize them at sight. The exercise was purposely made short, and the learning of words was not emphasized, for the teacher depended upon (1) *interest in the subject*, (2) *vividness of imagery*, and (3) *constant recurrence of the subject of thought* for the ultimate perfect learning of the new words. The few words written were a record sufficient to show difference of opinion as to the material to be selected. As the various fabrics were equally heavy and thick, they were tested as to their readiness to burn. Thus wool was chosen as least combustible, and so most useful for their purpose. When the material was decided upon, the teacher proposed to the children that they should make some kind of a fabric for themselves rather than use the manufactured cloth. The prospect of doing a new kind of thing seemed promising, and the plan was unanimously accepted.

They were shown a fleece as the source of wool, and by touch discovered that the softest and thickest locks of wool were upon the back, shoulders, and sides of the sheep, and that the poorer quality was upon the breast and legs. For experiments in the making of yarn they were given locks of unwashed wool of several varieties, and they at once loosened the fibers, pulled them more or less straight, and twisted them together into a coarse, uneven thread. The making of yarn in this way proved interest-

ing, and set the children to watching each other's results and comparing processes. At best it was seen to be slow.

This group of children had worked out some of the simple problems in the history of primitive peoples, and had spent three months in stories and lessons about the tree-men, cave-men, Indians, and Eskimos. They had had games, experiments, stories, and pictures to help in the making of theories as to origins of things and processes, such as the making of stone implements, fire, and pottery, and the preparation of food and clothing. The activities of the hunting stage in history had been, in experience or story, part of the school life. But at the time spinning was begun the history lessons moved from hunter life into the domestication of animals, herding, and the beginnings of shepherd life. While the children were twisting the wool fibers with their fingers, they were inventing theories as to how the same process was carried on by the earliest spinners. Upon deciding that they probably wound their thread upon a twig, the children were given little sticks upon which to wind theirs. The twisting threads set the stick whirling, and so by degrees led to the idea of the spindle. The children then made spindles of wood, and by this means spun a few yards of coarse, crude yarn.

They objected to the oil and dirt in the wool, and proposed washing it with soap. Those who chose hot water cleaned theirs most easily, and those who worked the wool too energetically discovered for the class the process of felting. Wool with all oil removed was found to spin less easily, so a little olive oil was used as a substitute for the natural oil, and the spinning was again made easier. Washing the wool, too, had matted it even in the cases where it was not fully felted, so hand-cards for combing and straightening the fibers were suggested. This simplified the process and introduced the children to a new stage in the evolution of textile machinery. At this point they were shown spinning-wheels under the hands of expert spinners, and should have been allowed to use the wheels, but that at the time was impossible. Other children of their age have used the large wool-wheel with a fair degree of success.

By the time each child had spun his few yards of yarn it was

agreed that the holders would be needed before sufficient yarn could be spun in this slow way. So the little already made was quickly woven into tiny rugs and taken to the playhouses at home.

A heavy, twisted, manufactured yarn was found for the holders, and, as it was undyed, the question of color was the first to be settled. The children were confident that dyeing the skeins would be a simple matter, and they brought for trial colored vegetables — roots, fruits, and berries — which, after free experimenting, all proved unsuccessful. These failures prepared the minds of the children for the idea of mordants, and when the practical effect of these was shown, the dyeing became more satisfactory.

With the laboratory experiments each child was taught to write some kind of a record, however simple. The one following is among the best, and was written after the series of dyeing lessons was finished. In the planning and discussion preparatory to this new ideas had been noted on the blackboard, and fragmentary records had been made, as indicated in the first lesson.

> We dyed the wool for the holders. We first tried berries, willow bark, and colored chalk for dyes, but the wool did not hold the dyes. We tried an acid then an alkalai in the dye. The colors were not pretty and the dyes were not fast. Then we used logwood, fustic, madder, cochineal, and indigo for dyes. We boiled the wool in the mordant, then in the dye. I made old gold dye from fustic. Cochineal made crimson dye, madder red, logwood black. The indigo should have been blue, but it was gray.

When a sufficient number of fairly successful skeins had been dyed, combinations of two colors were made by each child, and with these two skeins — one for warp, and one for filling — preparations were made for weaving the holders. In making the first little rug of their own yarn the children felt the necessity for some kind of a frame for stretching and holding firm the interlacing threads, and had suggested various simple devices for the purpose. As a means of teaching the simplest elements in weaving, the teacher showed the class how to sew warp onto a pasteboard card and darn the filling in and out with a long needle. Directions were then given, and each prepared a card for his own use. The problem was the drawing of a six-inch

square in the center of a piece of heavy pasteboard; pointing off the edges of the square into quarter inches, and piercing through the points by means of a coarse darning needle. Through these perforations the heavy wool yarn was sewed in parallel lines on both sides of the card, making a double warp. Across one side of this warp, through the card, then across the other side of the warp, and back again, the filling thread was woven, or rather darned, leaving open one edge of the double warp, so that it could be removed from the pasteboard when finished. Both warp and filling threads were easily kept parallel, because the perforations in the card had been accurately made and were placed at exactly opposite points in the edges of the rectangle. A plain weave—that is, "one thread over and one down"—was all that was attempted by most of the children, but a few succeeded with a basket weave of "two over and two under."

The diagonal was not attempted in this first weaving. The card was cut away from the holder when the weaving was done, the edges of the open side were overhanded together, and the holder was finished as a thick, double, coarsely woven fabric of two contrasting colors, just six inches square.

Some time after the making of these holders it was proposed to the children that they weave rugs for the playhouses of the first-grade children. The suggestion met with enthusiastic approval. In planning this new venture they were asked how they could lessen the work in weaving, and what it was that took so much time in the making of the holders. One child said that it was "going under and over all the time with the needle." They were then asked to think of ways to lessen this labor, and, after much discussion and trial with material for constant experiment, they did work out the primitive idea of making a shed by means of two sticks each to lift alternate threads of the warp. The alternate raising and lowering of a set of warp threads made it necessary to abandon the card as a loom, and quickly following came the idea of tying the warp to two fixed beams with space above and below. At this point they were shown the model of a wooden frame which had been made to combine all the points they had worked out, but with string substituted for one of the

harness sticks. This was used as a pattern, and from it each child made a loom for his own use.

There was more dyeing of wool, this time single Germantown yarn. Combinations of three colors were made by each one, and with these colors designs for making the rugs were drawn and painted. The planning of pattern had to be directed by the teacher toward the making of simple geometrical forms possible in primitive weaving. They were changed as little as necessary, but were set in order and afterwards drawn the exact size planned for the rug.

White cotton carpet warp was tied on the beams of the newly made looms, and weaving began. Longer needles or shuttles were asked for and made in the shop. These were, however, cast aside soon for darning needles and packers' needles, because these latter were found more convenient in the working in of patterns. After the weaving was well under way, there was a visit to the Field Museum to look at Navajo weaving.

The little rugs, when finished and fringed, reached the proportions of about seven by ten inches, and showed a pattern worked in two or three colors, filling effect. They were finally given to the children of the first grade and used in their playhouses.

To give their work as much meaning as possible, the children were led to think of the way in which other people had done the same thing which they were doing. Much time and thought were spent on all the textile experiences of primitive peoples, because these could be understood and perhaps used by the children. The ancient Hebrews and present-day Arabs were chosen as illustrating simply the relation of the herding, weaving, and trading processes. The habits of their lives were told by means of stories and pictures. Bible stories of patriarchal life — Abraham, Isaac, Jacob, and Joseph — were read, told, and retold. Grassy plains, rolling hills, deserts, and oases were modeled on the sand-table by teacher and children as a necessary part of the history stories.

Toward the end of the time in which this work was being done the class decided to tell the stories to the children of other

classes in the morning exercise. In planning the exercise they wrote such suggestions as this:

"I think it would be nice to make a little desert to show the children. We must have sand and rock, a tent and camels and flocks, and a well."

"We ought to have a mother and little girl weaving in front of the tent."

"We ought to tell how the shepherds drive their flocks to the grassy places in the desert. They travel at night because the days are hot. People in Arabia do not eat the same things we do. They eat dates and bread and cheese. They drink goats' milk. They grind their grain in a stone bowl. They do not have many dishes."

At the morning exercise the model of the desert was shown and explained by one of the children. He told about the wanderings of shepherds, their food, clothing, and customs. An eastern rug was shown, and its design and weave were explained. Then followed the stories of Abraham, Isaac, and Jacob. The children who told these stories had practiced them after carefully writing them. One is given as illustrative of the writing:

Abraham heard the voice of the Lord telling him to take his wife Sara, his nephew Lot, and all his herds, and journey to the land of Canaan. And the Lord promised Abraham that that land should belong to him and his sons forever. Abraham felt very badly because he had no sons. But the Lord promised him that his sons should be as many as the stars of heaven and as the sands of the sea.

So Abraham took his wife Sara and his nephew Lot, and all his flocks, and traveled to the land of Canaan. He traveled by night and followed the stars.

One day, as Abraham sat at his tent door, he saw three strangers appear. He went to meet them and invited them to enter his tent. He told his wife Sara to take quickly three measures of meal and cook cakes for the strangers. Then he ran to the flocks and chose the finest calf and told a young man to dress it for the strangers.

The strangers asked: "Where is thy wife Sara?" And they said that the next time they passed that way Abraham should have a son. Sara was in her tent, and when she heard that she laughed. So when the son was born they called his name Isaac, for Isaac means "laughter."

Some use of arithmetic was involved in the measurement and weighing of the dye materials, and as the children lacked the necessary number knowledge, it was given in definite lessons before the dyeing was done. The problems which arose were:

1. Use of the metric scale and weights.

2. Changing of rules intended for use in dyeing 100 grams of wool to be used for 75-gram skeins. This involved recognition of 75 as ¾ of 100; also that three-fourths of each rule should be used: the finding ¾ of 4, ¾ of 12, ¾ of 2, ¾ of 8, ¾ of 16, ¾ of 40, ¾ of 80.

3. Drawing of a six-inch square in the center of a card.

4. Marking the edges of the square into quarter inches.

5. Estimating in yards, feet, and inches of the amount of yarn necessary for warp and filling of the six-inch holder, threads being one-fourth of an inch apart.

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TEXTILE WORK CONNECTED WITH AMERICAN COLONIAL HISTORY.

THIS outline presupposes work as outlined in articles on "Primitive Textiles"[1] and "Basketry."[2] The social life of the period — the historical setting — is given in the history periods. The child's understanding of the daily life of a people is vivified by reproducing their typical occupations. This realization of their daily struggles is insured by his use of the actual material and the methods of their time.

One illustration of this is in the colonial cooking, where typical dishes were prepared and served. The contrast of service and customs thus brought out puts into relief present manners and customs. The character of the typical homes of the period was presented by means of descriptions and illustrations showing the development from the first rude shelter of the early colonist to that later style of architecture which was its legitimate outgrowth. Turning from food and shelter to the question of clothing, we find the colonists struggling in their dependence upon the mother-country for manufactured products and attempting to solve the problem of home production. Clothing is considered, not for the purpose of studying costume, but rather to give some idea of how it was obtained, to show the efforts of the leaders of the people to encourage the production of textile materials, the importation of implements and machines necessary to home production, and also the attention given to instruction in spinning and weaving among the younger people of the community. Such a study shows to the children in a forceful way the necessary share which industrial growth has in a life of political freedom. Industries other than textiles could illustrate these points, but the textile industry has the advantage of being associated in its beginnings with the intimate home life which developes gradually, in a way to be easily grasped by the child,

[1] ELEMENTARY SCHOOL TEACHER, June, 1903.

[2] *Ibid.*, October, 1903.

to the more complex and larger industrial facts. The gradual organization at this time of itinerant workmen into small groups, and also the beginnings of factory organization brought about by the inventions then being made in textile machinery, and the application of water- and steam-power, are used to show the rapid breaking up of village industries into town factory life, and the advance made in social and industrial organization.

The textile industry is a valuable occupation in educational work, because the processes can be duplicated in the schoolroom and planned from the materials through the child's own initiative. This makes it possible for him through his own experience to work out the evolution which actually has taken place historically.

On the theoretical side, the conditions of soil and climate were considered in connection with the physiography of the area. Maps were made showing the areas naturally favorable to the successful cultivation of fibers. Diagrams were made giving the extent of the cultivation of wool, flax, and cotton in the early colonial period in comparison with that of the present time. The tremendous increase in cotton cultivation was illustrated in previous work, when cotton was ginned for quilting and only eight ounces obtained by ten children in twenty minutes. They easily understood that one person could probably gin but one pound a day by hand, and unless some way were found to separate the seeds rapidly and without injury to the fiber, wool and flax would be used in place of cotton.

The length and structure of fibers were compared with reference to their spinning qualities and adaptability to cloth-making, and this comparison brought out the advantage of flax and wool in spinning and weaving with hand implements.

This interest in fibers was carried on to an examination of the fibers used extensively in yarn and cloth. A collection was made of the typical kinds of cloth, the analysis showing how the character of the cloth depends on the nature of the thread, and how the nature of the thread is further affected by the structure of the fiber. Upon these same conditions depends the relation of different textures to acids, alkalis, warmth, moisture, and inflam-

mability — all of which conditions must be taken into account in an intelligent selection of cloth for personal or for household use.

In the preparation for cloth and pattern-weaving, flax and wool were the two fibers selected to work with, as a result of the previous experiments. A fleece was sorted for fine and coarse yarn; the children organizing themselves, for the sake of economy, into sorters, teasers, carders, and spinners. Flax was cultivated in the garden and also made into thread, using the simplest method of retting, heckling, and scutching. A mallet was used for breaking the flax, and a heckle was made by driving nails through a half-inch board. Wild hemp gathered from open lots near the schoolhouse was treated in the same manner. The interest in the work lay in the process, the resulting fiber being of little use.

The fact that nothing is produced either sufficient in amount or good enough in quality for use is of no importance in such experiments as the one just mentioned. Its value is rather that it explains and illustrates certain conditions of production and manufacture. No mere observation of the finished product could give the child such an understanding of the structure and properties of these materials as he gets from these apparently fruitless attempts of his own.

In order to explain the nature of the more complex textile machines of the period, the children used their knowledge of the primitive forms of carding, spinning, and weaving in formulating the development to the colonial period. From a discussion of what they had actually done in the primitive work, a definite notion of the general principle of the machine was discovered.

In order to make the class conscious of the problem — which was, in this particular case, the necessary work to be done by the carding-machine — each child, before considering the actual machine, made an original diagram of a carding-machine which could be run by power, from his knowledge based on the principle involved in the hand implements.

Several of the children worked out the device of a cylinder turning over a flat surface, getting without suggestion the notion that rollers are a necessity for machine work.

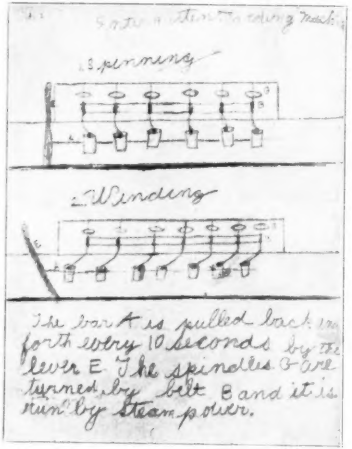
A study of spindle-sticks, whorls, and wheels dating from different historic periods makes it possible to form a theory of the invention of the spindle and its complete development through the spinning-wheel to the machine. How it grew out of the hand-work, and how improvements and changes were made to facilitate the work, was demonstrated by the children as they carried on the various forms of spinning. From the two forms of spinning known as "intermittent" (the New England wheel) and "continuous" (the German flax wheel) were demonstrated the two forms of spinning-yarns in the factory; the flexible woof-thread made on the "mule" showing the intermittent method and its close relation to the wheel, its progenitor, and the hard twisted warp made on the ring frame illustrating the "continuous" method of machine-spinning.

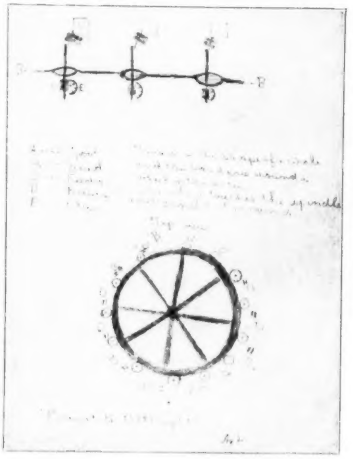
On the technical side, several points made clear to the children in their previous work were summed up in this year: (1) that the rotating spindle is the essential implement; (2) that improvements were possible in the mechanical means of rotating the spindle, (3) in the automatic method of attenuating the thread, and (4) in devices for working large groups of spindles. They were asked to invent a machine on which three or more spindles could be rotated automatically. This necessitated, of course, the automatic drawing and winding of the thread. Several of their original diagrams are shown in illustration.

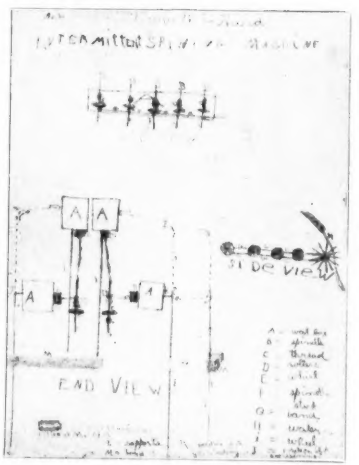
Through the weaving done on various forms of hand-looms, which they partly invented and partly copied from looms of typical primitive peoples, they were led to understand the mechanism of the Colonial and Kentucky looms, and to appreciate the value of the attachments used to make the work automatic. Several successful inventions were actually made by the children.[3]

In the shop they made a model of a Colonial loom, and worked out a process of warping which included the construction of a warping-frame, as shown in illustration. For individual weaving a roller-beam loom was used which involved a process of warping intermediate between the Navajo warping and that used in the Colonial loom. By such methods they traced the

[3] See article on "Primitive Textiles."


Spinning
Winding
The bar A is pulled back and forth every 10 seconds by the lever E The spindles B are turned by belt B and it is run by steam power.

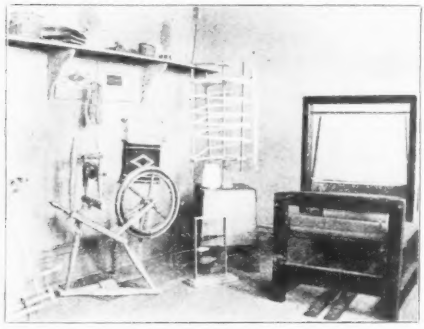




ILLUSTRATING SPINNING MACHINE.

development of warping processes as definitely as they had traced those of carding, spinning, and weaving.

These problems connected with the invention of power machines were given, not alone for the purpose of stimulating their inventive power, but also for the purpose of illustrating the problems involved in social and industrial development. The drawings and diagrams of their own inventions were compared with the principal inventions made in the eighteenth century, and also with the present factory machines. From examining the diagrams of machines, and observing these in action in the factory, it became clear that in the factory machines the principle is similar to that of the hand implements, and that the advantage of the mechanical devices lies chiefly in certain attachments which increases the speed and enables inferior fibers to be used.



VIEW OF ROOM.

A child is constantly seeking to improve his method and is keenly delighted to observe the changes which his material undergoes. Advantage can be taken of this educationally by selecting such material as will be suggestive, and will also permit of a definite approach to that phase of the work which follows naturally in the development of the subject and at the same time brings it in line with the phase of social development under consideration in the work in history.

In the solution of these problems the child gets the same training that is given by abstract subjects, such as geometry, for example, with this difference, that the problems presented here are concrete, in touch with practical life, and have a historical and social background which gives them a living interest.

With the little child, the history must grow out of these active

pursuits. Only through his own actions and experiences can the child realize conditions other than his own; he is not capable of abstraction and theorizing. Names and dates mean nothing unless he can make them center about the activities concerned in history, and through them understand the vital forces which have resulted in social organization. The textile industry has always had such an intimate place in the organization of society that through its dramatic history we can follow the general social progress.

In connection with the children's inventive work industrial history is closely followed. In tracing the development of the loom we read of the invention of John Kay's fly shuttle, which enabled weavers to double the work accomplished in a given time. As the spinners could not keep up with them, the result was a scarcity of yarn. This made spinning a more lucrative occupation than weaving, whereas formerly spinners had held a subordinate position; and a great impetus was given to the invention of spinning-machines.

Many of the conditions in this transition period were read and discussed: such as the position of the spinner and weaver; the beginnings of the organization of the several branches of the industry; the misunderstanding of the value of machine work, and the benefit of machine work to the community; the unfortunate position of the inventor, and the riots which followed any inventions to relieve hand-work. The children took up the problems with which men struggled when the supply and demand of yarn were so unequal as to cause weavers to travel the country for yarn, and when the equilibrium of the several branches of the industry was being adjusted in the inventions then being made. Here again maps were made showing how spinning is done at the present time in different parts of the world, whether by distaff, wheel, or machine, each child being given one country to investigate. This map gives some idea of the different periods of civilization. It also shows how in a central city, like Chicago, for example, all the forms of these survivals can be found as a result of a mingling through immigration of people in very different stages of development.

Some children have traveled considerably and from personal experience can describe primitive forms of spinning as practiced in Italy, France, Germany, Russia, etc., and also the more advanced forms in the factory centers of New England. The foreign domestics employed in the homes have been sources of information; while other children, without these resources, make use of books.

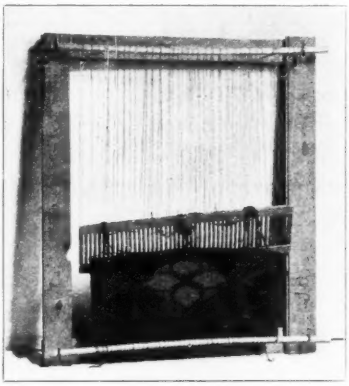
BAG.

In any work which is not purely experimental the child first plans what he will make. With a child this always has some definite use, such as clothing for a doll, furniture for a dollhouse, table-mat, belts, bags, etc. The size of the article is limited by the size of loom he can handle comfortably in the schoolroom. The proportions are planned, and a drawing is made either full size or to a scale, as required by the size of the object. A charcoal sketch is made of the article with its decorations, the two being conceived at the same time, and not separately, as is more often the case with grown people. The design usually has to be simplified when the child begins to consider his materials and the adaptation of his design to weaving. The technical design is made on cross-section paper, and the first consideration is planning the relation between the cross-section squares and the warp threads. As their proportion varies with the size and spacing of the warp threads, it becomes in each case a matter of experimentation when new material is used. A cross-section square may represent one or more warp-threads, and the relation of one to the other is a matter of calculation with each child.

It takes careful work to make the weaving exactly fit the proportions planned in the drawing. A charcoal design is next filled into the cross-section drawing in such a way as to retain as nearly as possible the character and proportion of the original sketch. This paper has wonderful and delightful surprises for

the child, as a commonplace design often assumes interesting forms when transferred.

It is a matter of further calculation, when the weaving is going on, to repeat the woof-threads until they are in exact proportion to the squares. This is also an individual matter, as the materials, method of warping, and character of the weaving influence the texture.



WARPING FRAME.

In choosing the unit of design the children often conventionalize flower forms; others use geometric forms. In each case the effort of the teacher is to have the child appreciate the beauty of the unit and of good spacing. In color the children have previously used one color with the natural color of the yarn, and two or three values of one color with the natural yarn. In this year, when it is assumed that the children have handled simple color schemes, the dark-and-light scheme which is made in charcoal is planned in not more than three colors. The color schemes of the whole class are compared, and a list is made of the colors called for by the color design. The dyeing of the yarn is group work, each individual being responsible for the general principle involved in producing any color, and also for the directions for each particular color. In the dye-shop sufficient yarn of each color is dyed for the class. In the experiment with vegetable dyes the direct method of dyeing is first used — in the ordinary colors, red, blue, yellow, brown — together with the use of mordants with these same colors for indirect dyes, and also in the production of various colors and shades of color on polygenetic dyes. The effect of different fibers on the dye-stuff is one of the first observations made. After the experimentation with fibers and mordants with the pure dye-stuffs, other colors

are produced by mixing the dyes, using the same principle for mixing which the child has used in handling a water-color box. Yellow and blue is one of the first combinations made in producing a green. When any of the direct dyes are crude or do not tone in with a planned color scheme, it is mixed with the color it lacks until it harmonizes with the other colors.

The question is frequently asked why we have the child return to outgrown methods of work. In introducing him to primitive conditions, we do not mean that we desire to have him repeat the progress of the race, but rather to introduce him to a scene of activities and social conditions which are simple enough for him to comprehend and in a measure control. This historical attitude toward the work does not mean any withdrawal of interest from immediate home activities. It rather strengthens the connection of home and school life, in that the child is able, through partaking in these simpler occupations, to understand many of the secrets and mysteries of modern manufactures. He is not separated from home conditions, but repeats in a simpler fashion the work of today. As his horizon widens and he himself sees larger opportunities, he is able to construct and fill in with richer content a larger whole. The method is constructive rather than analytic. In giving emphasis to this side of social history, we bring the child into closer touch with the inner life of the people with whom he is concerned in history. The textile industries were fireside occupations, and included all members of the family in helpful co-operation. In the period between the household and domestic industries, where part of the work was done by a group of workers in a central shop — as, for example, carding and fulling — the child gets ideas of simple social organization, the relation of home and community life, and the responsibility of the individual to this larger life. Following the development through the transition period, he is prepared to comprehend the purpose of factory organization. Thus, in comprehending the growth of one social occupation, and its effect upon social life and history, he is better able to take up the more intellectual problems connected with a further study of economics in secondary and college work.

It is a noticeable fact that the children who take up this later work without the primitive experience in textiles depend upon given information. They follow the lead of children whose attitude is one of inquiry and investigation, and whose creative impulse shows, not only in the discovery of processes and methods of work, but also in their artistic impulses and power in creative work. Pedagogically considered, this is the most important result of the work — this making the children scientific and self-reliant in their attitude of mind.

One important fact, not to be overlooked, is that the work is continuous throughout the child's school experience — not a piece of work of a week or a year, but an industry in which the different periods of advancement can be presented continuously, while the student is perceiving a larger social horizon and assuming larger social responsibilities.

There are two currents of experience which run into the child's work — that which he gets from his own environment, and that which he gets from a study of the past. This past which he is studying contains also these two forms of experience — the tradition and technique of each period, and the revolution which takes place through the changes and advance made in each succeeding period. At each period the question unconsciously arises: What did these people inherit, and what additions did they make to their inheritance?

This work also serves a utilitarian purpose, and leads finally to a practical end of the highest order. In opening these fields of work to the child by means of expression through materials, opportunity arises for the awakening of latent powers. His tendencies are utilized before the individual loses plasticity, and before he is hedged in by the limitations of interest and stress of everyday opinion through contact with occupations and business.

In the production of articles for actual use the joy of the child lies in the mere doing and making. His impulses, constructive and artistic, are realized in actual, concrete form. The result of his work shows any laxness or carelessness in its planning or construction. He is face to face with himself, criticism from another being superfluous. He is not only adjusting

himself to the social environment, where he is constantly put to test in the organized group work, but he is also in contact with the physical environment, from which there is no escape from the judgment passed, and where excuse is futile even to himself. The moral effect of this is inevitable. Here, also, one finds an opportunity for children limited in other forms of expression, who often gain a position among their associates.

The scientific method is followed throughout. The child is made conscious of the problem and seeks his own solution in the material he uses. Aside from broadening the historical horizon, the child gains experience with the forces and materials of nature — physical facts and forces involved in the implements and machines used in balancing, weighting, and rotating the spindle. He learns the advantage of friction that makes possible the transmission of power through a belt from the large wheel to the spindle, the advantage of simultaneous winding and spinning obtained by a difference in size of the diameter of bobbin-wheel and spindle-wheel, and of the system of draw rollers for attenuating the threads. The foundation for a better understanding of chemistry is laid in the preparation, mordanting, and dyeing of fibers, yarn, cloth, etc. The study of the source of the raw material gives him geographical conditions of climate and soil. And, finally, the consummation of all of these is attained in art. The result is that the child in each period of the industry has experience along several distinct lines of work: (1) the history which is the basis of the whole; (2) the inventive and experimental work, including science, physiography, chemistry, and physics; (3) simple problems in mathematics, in planning of implements, and in the technical construction of design; (4) æsthetic expression in color and design; (5) hand-work in woodwork and textile materials.

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